Rodent pollination in *Androcymbium latifolium* (Colchicaceae)

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The repeated discovery of rodent pollination (therophily) has lead to the concept of a rodent pollination syndrome. The adaptive plant traits that characterize this syndrome include flowers packed tightly into geoflorous and cryptic inflorescences, nocturnal anthesis and production of copious amounts of sugar-rich nectar and pollen as well as a musky odour. *Androcymbium latifolium* (Colchicaceae), a geophyte that occurs in the semiarid Succulent karoo region of South Africa, exhibits several of the therophilous traits. Experiments were conducted investigating the hypothesis that this species is rodent pollinated. Several lines of evidence were found to support this hypothesis. These include: the almost exclusive presence of *A. latifolium* pollen in the scats of live-trapped *Aethomys namaquensis* rodents and in the fuschin gelatine swabs from the rostrum area of the rodents; and observations of captive *A. namaquensis* individuals foraging for nectar non-destructively in *A. latifolium* inflorescences. The exclusion of rodents from inflorescences resulted in a significant decrease in seed set compared to control plants. This result indicated that rodents do contribute to pollination success of *A. latifolium*, however, in the absence of rodents, the flowers self-pollinate, indicating a facultative selfing strategy. Therefore, *A. latifolium* displays an opportunistic life history attracting rodents to the sugar-rich nectar when other food sources are scarce. This is supported by the observation that the seed set of *A. latifolium* decreases as the distance from the rodents nesting site increases. This study presents substantial evidence for therophily in *A. latifolium*, making this species the first species in the family Colchicaceae, and the second geophyte in the world to be rodent pollinated.

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Aloes of the World project

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The genus *Aloe* L. comprises ±500 species to which more than 1000 names have been applied and is a prominent component of the landscape throughout its distribution range. Aloes occur on Africa (with the majority of species), the Arabian Peninsula, Socotra, Madagascar and the Mascarene Islands. The Aloes of the World project is planned as part of the African Plants Initiative. It aims to provide a comprehensive electronic facility pulling together all relevant information and available images on this predominantly African genus on a world scale in a web-based, user-friendly information base. The berried aloes from the genus *Lomathophyllum* Willd. will be included as a section of the genus *Aloe*, for the purpose of this project. The information base will consist of scanned images of specimens, artwork, photos and Floras, as well as a world checklist, maps and identification keys. The backbone of the project is a database containing information on, amongst others, current names, synonyms, important literature, distribution, habitat and type specimens.

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Metabolic engineering of sucrose accumulation in sugarcane

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Sugarcane is one of the most productive crops worldwide. In high-sucrose varieties more than 60% of its dry weight is accumulated as sucrose in the culm. As commercial sugarcane varieties represent polyploid and highly heterozygous genotypes, sugarcane breeding is to a certain extent difficult. Genetic engineering might therefore enable to further increase the sugar content by manipulating targeted enzymes influencing sucrose accumulation. To understand the regulation of carbohydrate partitioning, transgenic sugarcane clones were generated where key steps of carbohydrate metabolism were down-regulated using antisense RNA or RNAi approaches: to repress the partitioning of carbon towards respiration; to minimize futile carbon cycling between sucrose, hexoses, and intermediates of respiration; to optimize the partitioning of carbon between cell wall polysaccharides and sucrose; to enhance the flux through the sucrose biosynthetic pathway. Several examples will be discussed emphasising differences in the regulation of carbohydrate partitioning between sugarcane and other more widely studied species such as *Arabidopsis*, potato and tobacco.

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